OKIDATA®

Microline 320/321
Setup Guide

OKIDATA

MICROLINE®
320 and 321

Setup Guide

Note to our Customers

Every effort has been made to ensure that the information in this document is complete, accurate, and up to date. OKIDATA assumes no responsibility for the results of errors beyond its control. OKIDATA also cannot guarantee that changes in software and equipment made by other manufacturers and referred to in this book will not affect the applicability of the information in this manual.

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IMPORTANT SAFETY INSTRUCTIONS

Your OKIDATA printer has been carefully designed to give you years of safe, reliable performance. As with all electrical equipment, however, there are a few basic precautions you should take to avoid hurting yourself or damaging the printer:

- Read the setup and operating instructions in this Handbook carefully. Be sure to save it for future reference.
- Read and follow all warning and instruction labels on the printer itself.
- Unplug the printer before you clean it. Use only a damp cloth; do not use liquid or aerosol cleaners.
- Place your printer on a firm, solid surface. If you put it on something unsteady, it may fall and be damaged; if you place it on a soft surface, such as a rug, sofa, or bed, the vents may be blocked, causing the printer to overheat.
- To protect your printer from overheating, make sure all openings on the printer are not blocked. Don't put the printer on or near a heat source, such as a radiator or heat register. If you put it in any kind of enclosure, make sure it is well ventilated.
- The printhead can get quite hot when it's been printing for a length of time. Don't touch the printhead until it's had a chance to cool off.
- Do not use your printer near water, or spill liquid of any kind into it.
- Be certain that your power source matches the rating listed on the back of the printer. If you're not sure, check with your dealer or with your local power company.
- Your printer has a grounded, 3-prong plug as a safety feature, and it will only fit into a grounded outlet. If you can't plug it in, chances are you have an older, non-grounded outlet; contact an electrician to have the outlet replaced. Do not use an adapter to defeat the grounding.

- To avoid damaging the power cord, don't put anything on it or place it where it will be walked on. If the cord becomes damaged or frayed, replace it immediately. (See the enclosed Customer Service Guide for replacement parts information.)

- If you're using an extension cord or power strip with the printer, make sure that the total of the amperes required by all the equipment on the extension is less than the extension's rating. The total ratings of all equipment plugged into the outlet should not exceed 15 amperes.

- Do not poke anything into the ventilation slots on the sides of the printer; you could get a shock or cause a fire.

- Aside from the routine maintenance described in this Handbook, don't try to service the printer yourself; opening the cover may expose you to shocks or other hazards. Don't make any adjustments other than those outlined in the Handbook — you may cause damage requiring extensive repair work. The enclosed Customer Service Guide explains how to get your printer serviced by qualified OKIDATA technicians.

- If anything happens that indicates that your printer is not working properly or has been damaged, unplug it immediately and follow the procedures in the Customer Service Guide for having your printer serviced. These are some of the things to look for:

  The power cord or plug is frayed or damaged.

  Liquid has been spilled into the printer, or it has been exposed to water.

  The printer has been dropped, or the cabinet is damaged.

  The printer doesn't function normally when you're following the operating instructions.

▶ Introduction

This Setup Guide will help you get your new MICROLINE 320 or 321 printer set up and running quickly. Here's how it's organized:

Part 1, **Setup**, shows you how to get the printer ready, connect it to your computer, and how to load paper.

Part 2, **Operation**, Describes how to control your printer from the front panel, and gives you some hints on what to do if you're having problems.

If you want more details about working with software or advanced topics like graphics, read the **Reference Guide**, also included. Use it to find out more about particular features or to explore your MIRCOLINE's many capabilities.

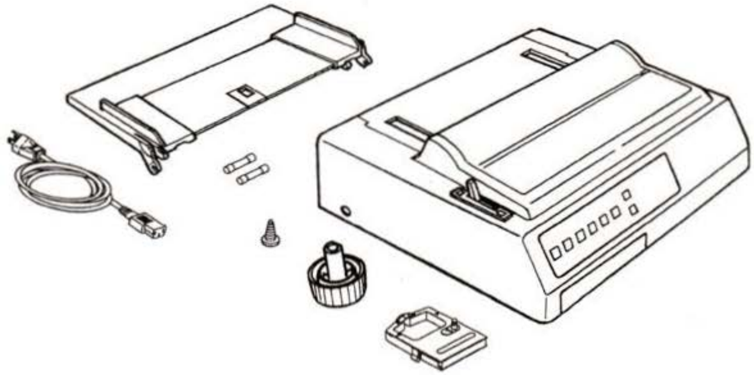
If you have problems not covered in these books, or in the unlikely event that your printer needs service, turn to the **Customer Service Guide**—it tells you how to get help and how to order spare parts and accessories.

▶ Setup

Choose a sturdy table, desk or printer stand to place your printer on when you remove it from the carton. Remove the styrofoam sides—be sure to save all packing materials in case you need to ship the printer again—and check the box for these contents:

☐ ML320/321 printer
☐ Paper separator
☐ Power cord
☐ Platen knob
☐ Ribbon cartridge
☐ Grounding screw
☐ Spare fuses (2)
☐ Customer Service Guide
☐ Reference Guide
☐ Setup Guide

Note Interface cable and paper are sold separately.

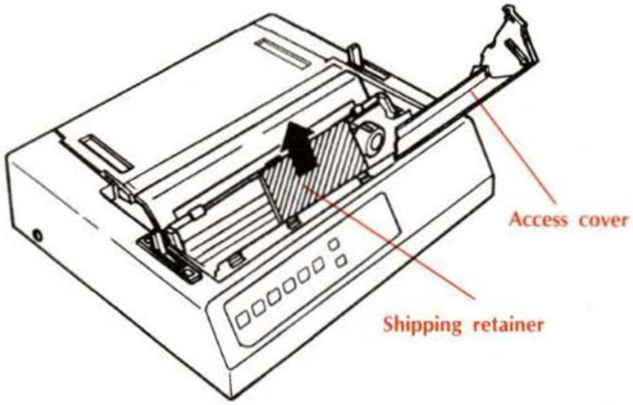


If any of these items is missing or damaged, see your dealer for a replacement.

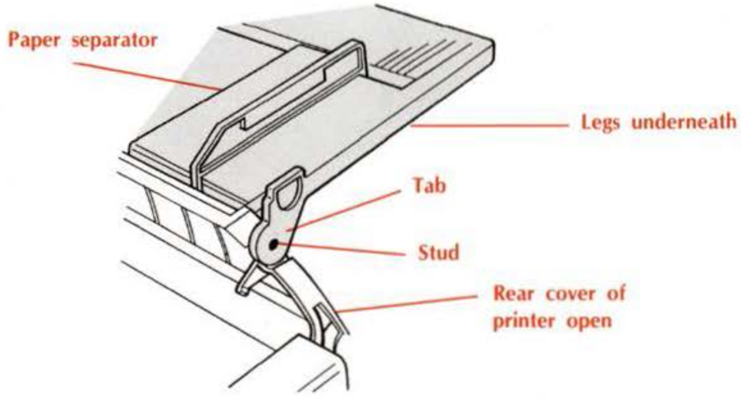
Preliminaries

Don't plug the printer in until it's set up and ready to operate.

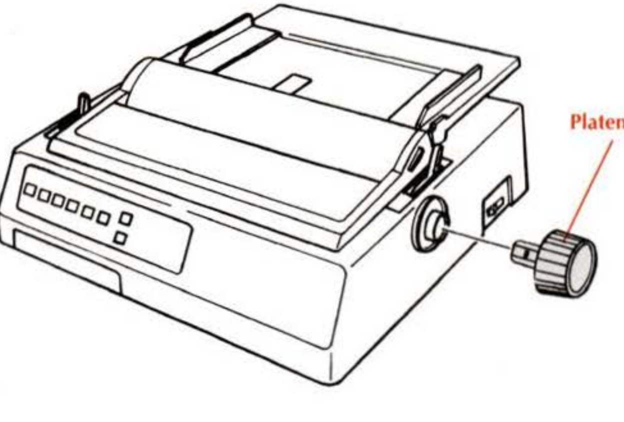
1. If there is clear protective film on the access cover, remove the film.
2. Open the access cover and remove the shipping retainer. Be sure to save it with the other packing materials in case you ship the printer.



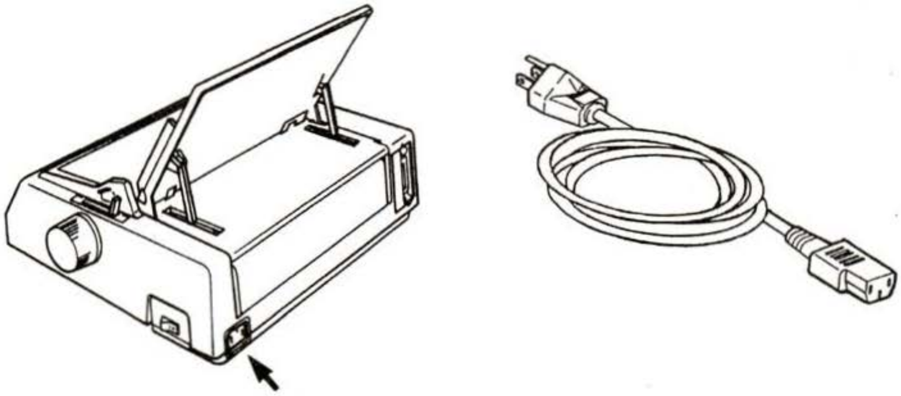
3. Install the paper separator: Open the rear cover of the printer. Holding the legs closed against the paper separator, place the tab on one side of the separator over the stud on the side of the rear cover. Pull gently on the other tab to slide it over the stud on the other side of the rear cover. Then close the rear cover.



4. Insert the platen knob on the right side of the printer. Match the flat side of the knob to the flat side of the platen shaft.



5. Make sure the power switch is OFF. Plug the power cord into the back of the printer. Plug the other end into a grounded outlet.



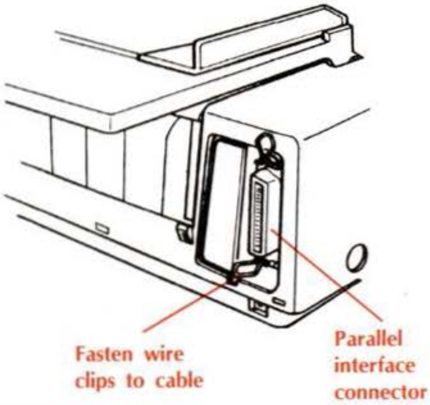
Important

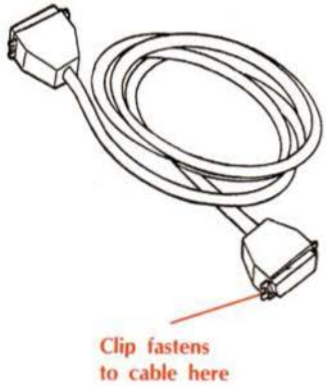
Make sure the outlet is grounded. Do not use an adapter to defeat the grounding.

Connecting with the Computer

These instructions are for the standard parallel interface. If you have the optional serial interface, see the appendix for installation and connection details.

1. Make sure both the printer and the computer are OFF.





2. Plug the interface cable into the port on the back of your printer. (The connector is keyed, so it will only fit in the proper way.) Be sure to fasten the wire clips to the cable for a secure connection.

Note Interface cables are sold separately.

Inserting the ribbon cartridge

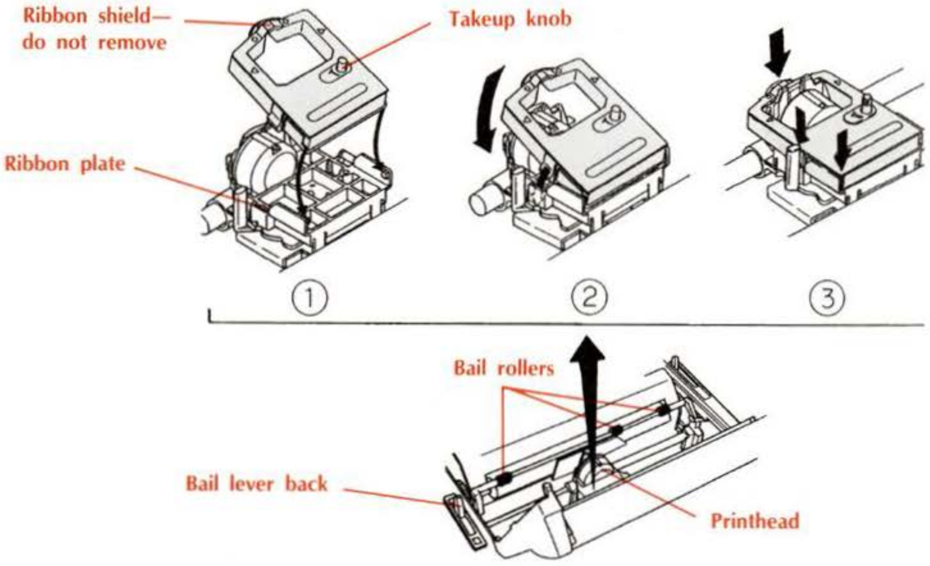
1. Open the access cover.

Important

The printhead can get very hot during extended periods of printing—be sure to let it cool off before you touch it. Be sure the power is off before you move the printhead.

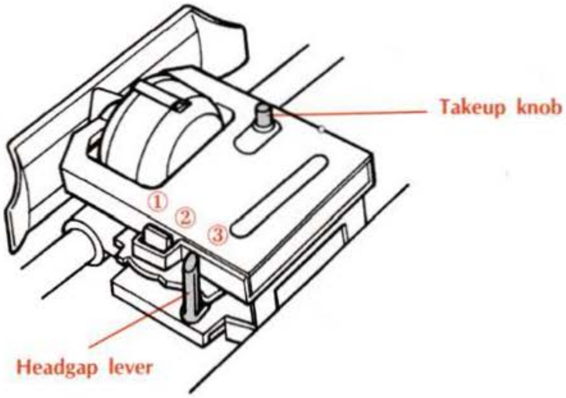
---

2. Position the printhead between the bail rollers. Make sure the bail is closed (bail lever toward back of printer).
3. Hold the ribbon cartridge with the knob facing up and the flat end toward the front of the printer.
4. Place the flat end into the ribbon plate, then lower the front of the cartridge over the printhead until it snaps into place.



5. Turn the knob in the direction of the arrow to take up the slack in the ribbon.
6. The headgap lever by the side of the cartridge adjusts for different paper thicknesses. Set it to:

    1. for one- or two-part forms,
    2. for three- or four-part forms,
    3. for envelopes and extra-thick paper



Important

Be sure to use only ribbons specifically for MICROLINE 320/321 or MICROLINE 100 Series printers. Ribbon cartridges for ML390/391 printers look similar, but they will not fit in the ML320/321.

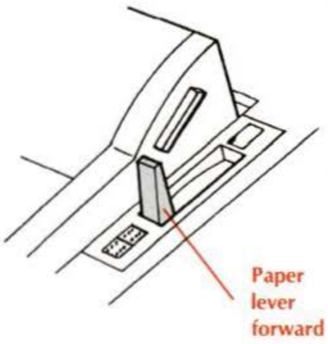
For best result use genuine OKIDATA ribbons, part number 52102001.

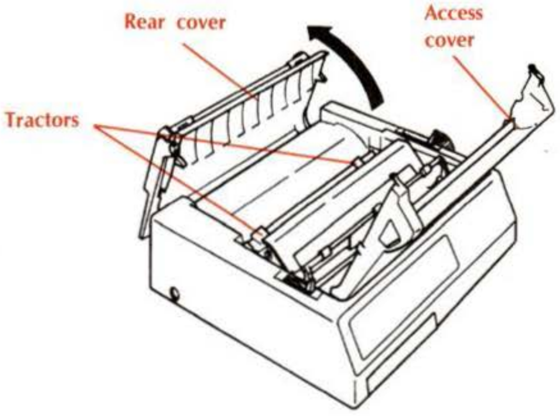
Loading Paper

The ML320/321 can handle many different types of paper with pushbutton ease. Check Appendix E of the Reference Guide for details on paper specifications.

Rear Feed, Continuous Forms

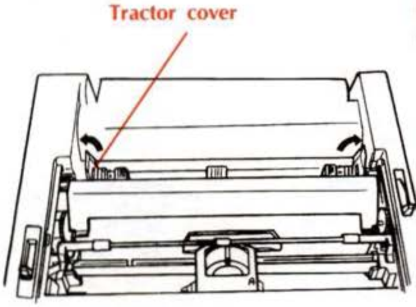
1. Make sure the paper lever is forward.

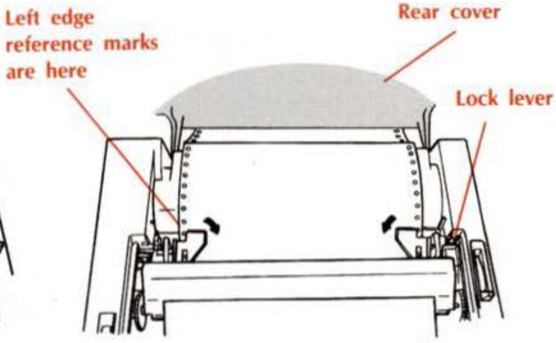




2. Open the access cover and rear cover to expose the tractors.

3. Open the tractor covers.
4. Pull the paper through the opening between the printer and the rear cover.



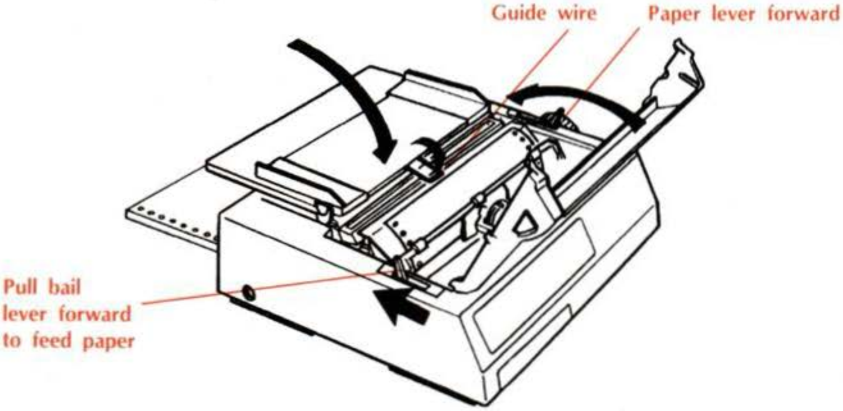


5. There are reference marks on the printer to show the recommended left edge position for the two most common paper sizes. Place the first two sprocket holes on each side of the page over the pins. To adjust the tractors for the width of the paper, pull the lock levers forward, slide the tractors into position, then push the levers back to lock.

Important

Do not position the left edge of the paper more than ½″ from the end of the platen. The paper must cover the groove in the left side of the platen; if it doesn't the printer will signal a paper out alarm.

6. Close the rear cover. Make sure the paper separator is flat on the printer. Open the guide wire, which keeps paper from curling back into the printer. Then close the access cover.
7. Turn the printer on. The printhead will move to the left side of the platen and the control panel will light up. The ALARM light will also come on, but don't be concerned: it's just telling you that there is no paper loaded.



8. Pull the bail lever forward. The paper will automatically feed into the printer and the ALARM light will go out. If paper doesn't feed, check to make sure that the paper lever is in the forward position.
9. Push the bail lever back to close the bail.

Note Do not use the Form Feed button to load paper.

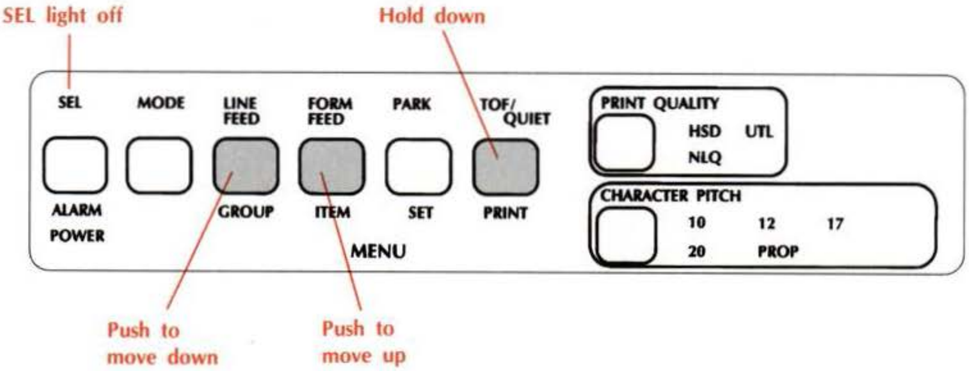
10. Adjust the top of form (see next page), then press the SEL button (the SEL light will go on) and you're ready to print.

Top of Form

Make sure the printer is deselected. Hold down the TOF/QUIET button and press:

FORM FEED to move the paper up, or
LINE FEED to move the paper down.

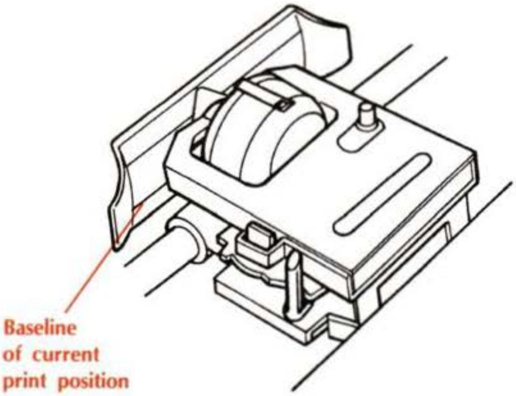
This moves the paper in very fine increments—$^1/_{144}$″ to be exact—so you can position the top of form precisely. The amount you can move the paper down using this method is limited to avoid potential paper jams.



The lower red line on the paper shield shows the baseline of the current printing position to help you place the top of form where you want it.

Important Make sure the paper is held in place by the bail. If the top of the page is set below the bail, paper will catch on the bail and cause a jam.

When the top of form is set where you want it, no further action is required. The position is recorded permanently in the printer's memory—even when the printer is turned off—until you reset it.



Forms Tear Off

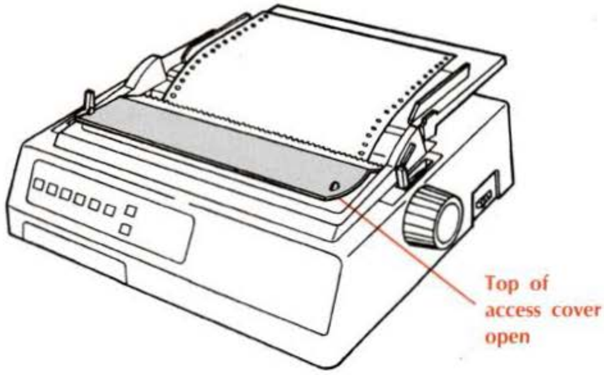
Forms tear off makes paper handling even simpler with the MICROLINE 320/321. When you're using rear-fed continuous-form paper, you can easily tear off a printed sheet without wasting paper or readjusting the printer.

To activate this feature, enter Menu Select mode and set the FORMS TEAR OFF item to ON—it's in the Vertical Control group. (See page 35 for details on how to use the menu.) Then set top of form as described on page 13. When you release the TOF/QUIET button, the paper advances from the initial printing position to the tear off position—the top of the page is even with the tear bar, located under the clear top of the access cover.

Important

You can check the initial printing position at any time: press the SEL button to deselect the printer, then press TOF/QUIET; the paper will move down to the initial printing position until you release the button.

The page stays in the tear off position until the printer receives data; then the paper moves down to the initial printing position to print. A few seconds after printing stops, the paper moves up to the tear off position. Now it's easy to tear off the printed page along its perforation: just open the clear top of the access cover and tear the page off against the tear bar.



Note

Some programs, such as high resolution graphics packages, pause occasionally while sending data to the printer. If the pause lasts more than two seconds, the paper will advance to the tear off position until more data is received. No data will be lost, but this extra paper movement can cause uneven print registration in graphics. If you have this problem, use the menu to deactivate forms tear off.

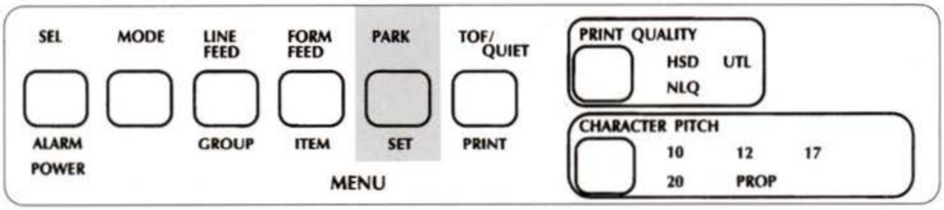
Don't use forms tear off when printing on labels or multipart forms. Labels should only be fed from the bottom of the printer.

Paper Park

This handy feature makes it easy for you to switch from continuous forms to single sheet paper and back.

To park the paper:

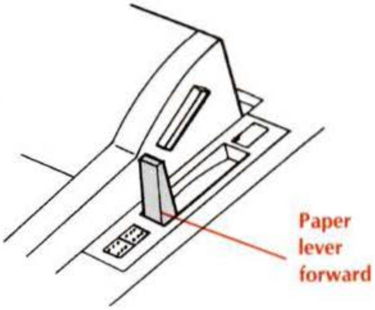
1. Tear off any printed pages.
2. Press the PARK button. The paper will retract from the paper path.



Push the paper lever back to the single sheet setting, and you're ready to insert single sheets. See "Loading Single Sheets" on page 19.

To return continuous forms to the printer:

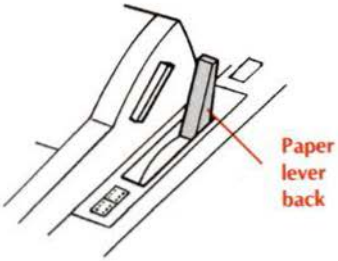
1. Make sure the paper lever is set for continuous forms (lever forward).

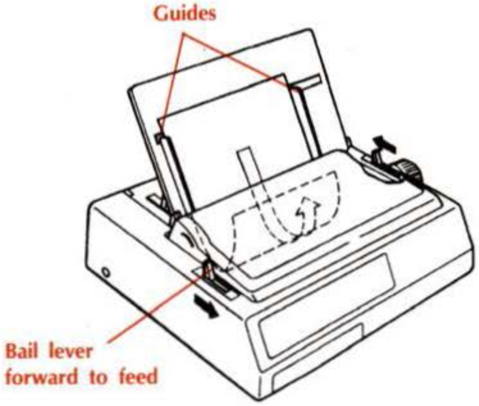


2. Pull the bail lever forward. The paper will advance to the front of the platen.
3. Push the bail lever back and adjust the top of form, if necessary. (For details on setting top of form, see page 13.)

Single Sheets

1. If you have continuous form paper in the printer, use the paper park feature to back it out of the paper path (see page 17). The ALARM light will go on and the SEL light will go off.
2. Push the paper lever to the single sheet setting (toward the back of the printer).





3. Open the access cover and push the guide wire back into its locked position on the paper separator. Raise the separator to its upright position.
4. Set a sheet of paper on the paper separator and adjust the guides so that they're barely touching the edges of the paper. (There's a reference mark on the separator for the left paper edge.)
5. Pull the bail lever forward. The paper will automatically feed into the printer.
6. Push the bail back.

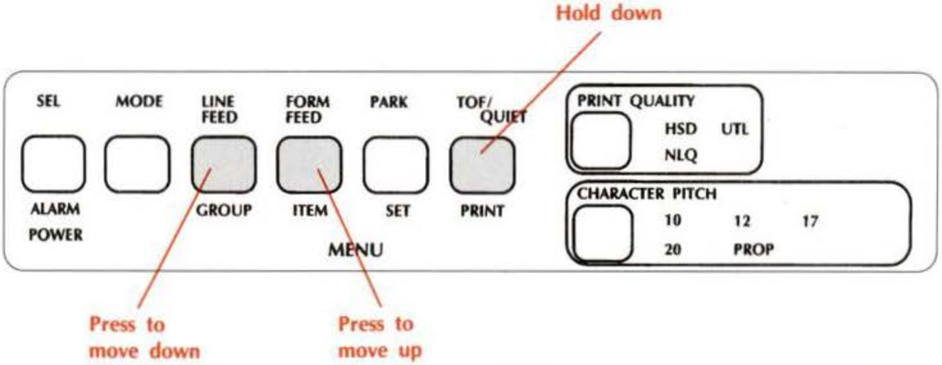
To adjust the top of form:

Make sure the printer is deselected. Hold down the TOF button and press:

FORM FEED to move the paper up, or

LINE FEED to move the paper down.

This moves the paper in very fine increments—$^1/_{144}$" to be exact—so you can position the top of form precisely. The amount you can move the paper down using this method is limited to avoid potential paper jams. When you release the buttons, the position is permanently stored in the printer's memory—even after the printer is turned off—until you reset it.



The lower red line on the paper shield shows the baseline of the current printing position to help you place the top of form where you want it.

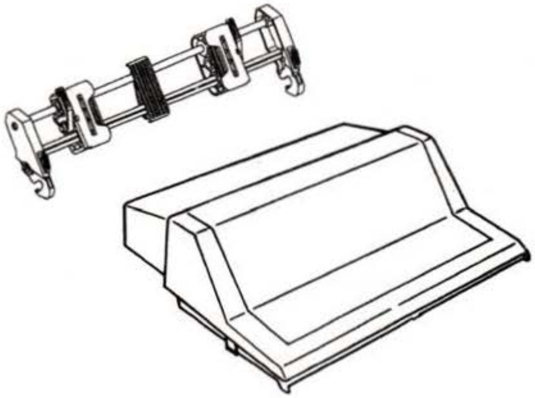
Important

Make sure the paper is held in place by the bail. If the top of the page is set below the bail, paper will catch on the bail and cause a jam.

The Optional Pull Tractor

This option lets you feed continuous-form paper from the bottom of the printer. Use bottom feed for normal continuous-form paper as well as for labels and other specialty papers that have problems wrapping around the platen.

Important To prevent labels from peeling away from their backing during printing, use only bottom feed with labels.

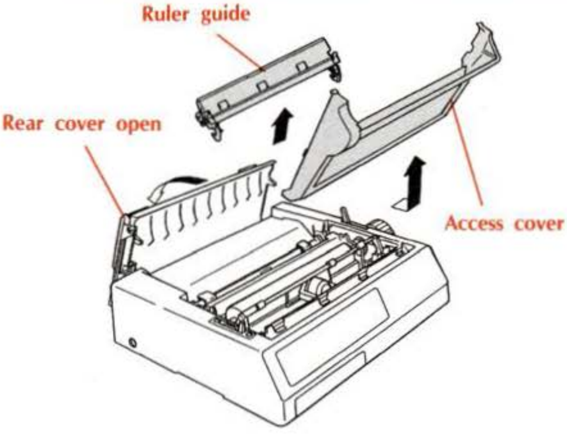


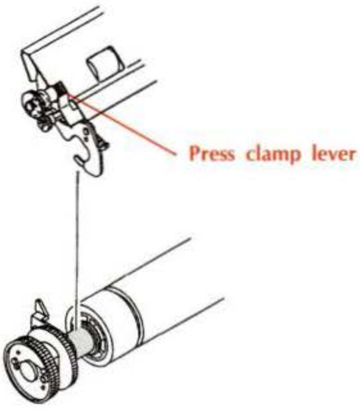
You can also use the pull tractor together with the built-in push tractor for more precise paper control when you're using multipart forms or doing reverse line feeds. (See page 26.)

Important Make sure the Form Tear Off feature is turned off in the menu before installing and using this option.

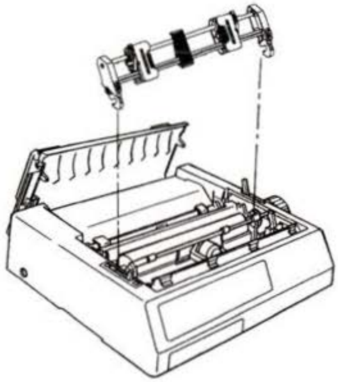
Installation

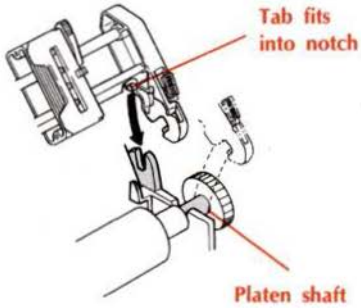
1. Make sure the printer is off. Then open the rear cover.
2. Open the access cover and lift it off and set it aside—you'll be replacing it with the access cover that came with the tractor.
3. Open the bail lever (lever forward).
4. Remove the ruler guide: hold down the clamp levers on either side of the guide and rotate the guide back to release it from the platen.



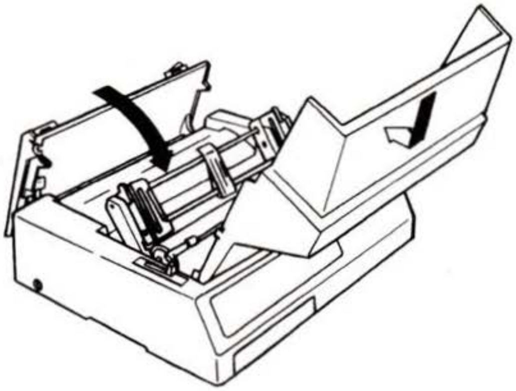


5. Lower the tractor onto the printer. Fit the tabs on the tractor into the notches behind the platen, then swivel the tractor forward until it clamps onto the platen shaft.





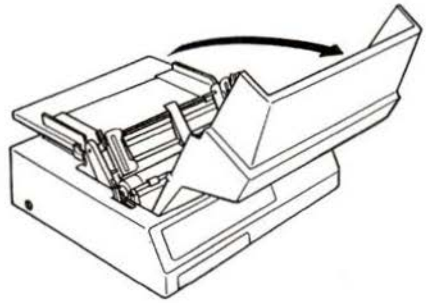
6. Install the access cover supplied with your tractor: Holding the cover angled slightly toward the front, fit it onto the printer and lower into position.

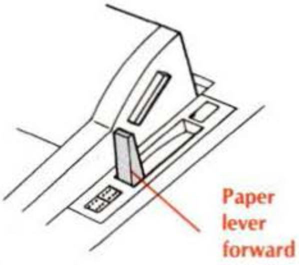


7. Close the rear cover.

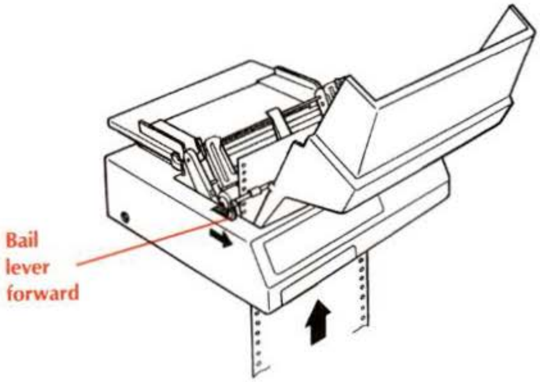
Loading Bottom Feed Paper

1. Place your printer on a slotted stand. Put the paper in a stack underneath the slot.
2. Open the access cover if it's closed and make sure the paper lever is in the continuous forms (forward) position.

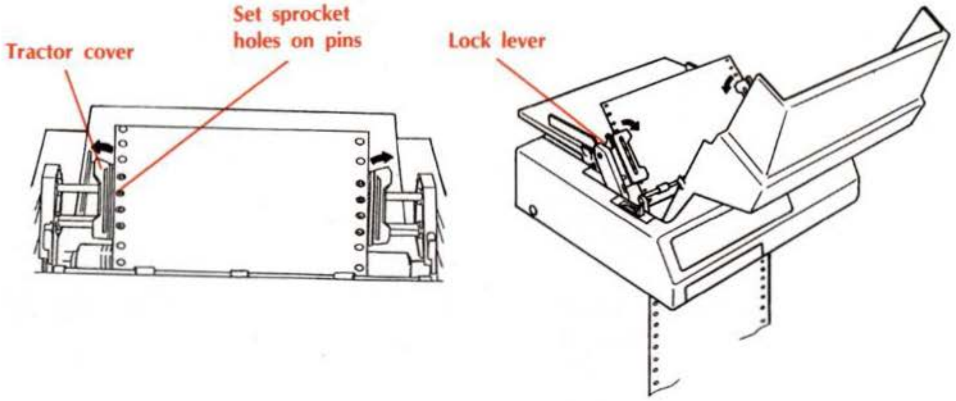




3. Open the bail (bail lever forward) and push the paper up through the slot in the bottom of the printer until it's between the bail and the platen.



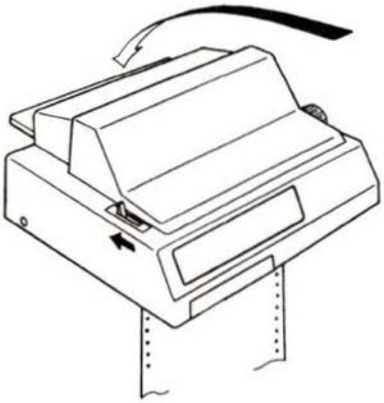
4. Open the tractor covers.
5. Place the sprocket holes over the pins. To adjust the tractors for the width of the paper, pull the lock levers forward, slide the tractors into position, then push the levers back to lock.



Important

Do not position the left edge of the paper more than ½" from the end of the platen. The paper must cover the groove in the left side of the platen; if it doesn't the printer will signal a paper out alarm.

6. Close the access cover. Make sure the paper separator is flat on the printer.



7. Use the platen knob to adjust the top of form—the lower red line on the ribbon shield shows the base line of the current print position. If the printer is on, deselect it, then press the TOF/QUIET button to set the top of form. If the printer is off, top of form will automatically be set when you turn on the power.

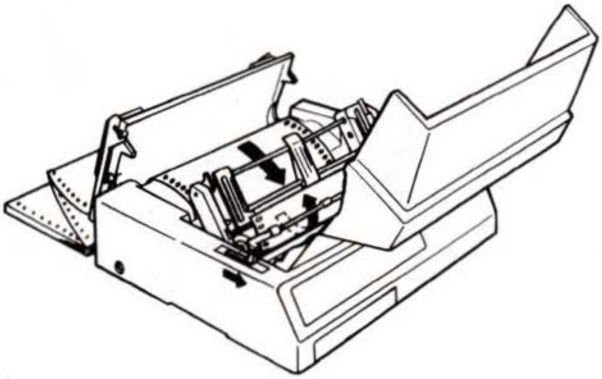
Important Do not use the paper park feature (page 19)—the paper will disengage from the pull tractor if you do. This can also happen if you use too many reverse line feeds. You can, however, use paper park to remove the paper from the printer.

Loading Rear Feed Paper Using both Tractors

This arrangement feeds continuous-form paper through both the built-in tractor and the optional pull tractor. It's particularly handy when you're printing on multipart forms or when you're using reverse line feeds.

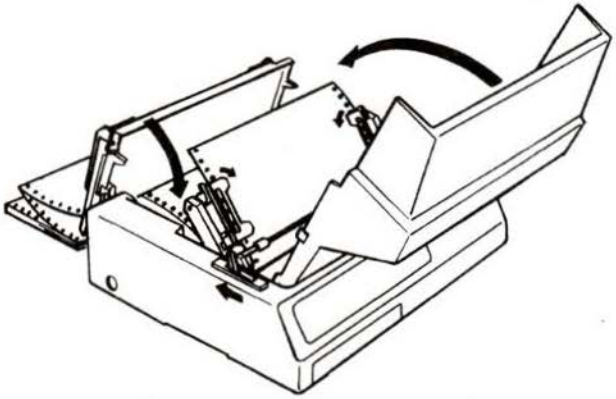
Important Labels should only be fed from the bottom.

1. Follow the instructions for loading rear feed paper with the built-in tractor. (See page 10.)
2. Using the platen knob, wind the paper up to the pull tractor.



3. Push the paper lever back to the single sheet position. This disengages the built-in tractor so you can adjust the paper on the pull tractor.

4. Open the tractor covers, set the paper holes on the sprocket pins, adjust the tractors, and close the tractor covers.



5. Use the platen knob to take up the slack in the paper, but be careful not to stretch the paper too tightly.
6. Pull the paper lever forward to the continuous-form position.

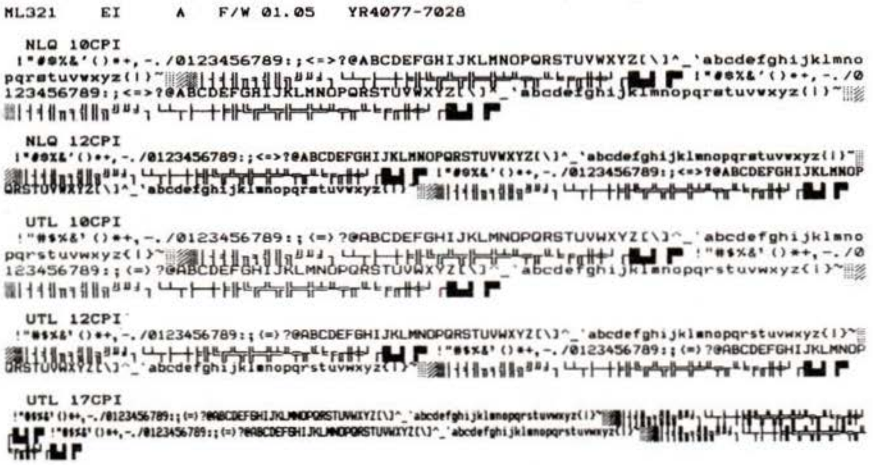
Important

Do not use the paper park feature (page 19)—the paper will disengage from the pull tractor if you do. This can also happen if you use too many reverse line feeds.

Running a Self Test

After you've installed ribbon and paper, you're ready to run one of two self tests. Do this any time you want to make sure the printer is functioning properly.

Holding down LF while turning on the printer produces a limited sample of available print styles. When complete (one page), the printer stops and the SEL light goes on.



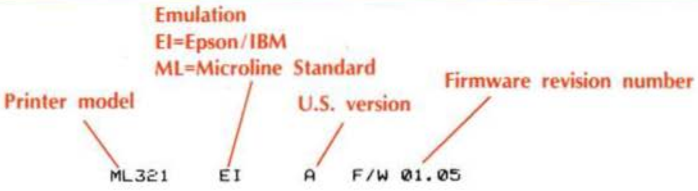
```
ML321     EI     A   F/W 01.05   YR4077-7028

  NLQ 10CPI
 !"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmno
pqrstuvwxyz{|}~                                                  !"#$%&'()*+,-./0
123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~

  NLQ 12CPI
 !"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~
                              !"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOP
QRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}

  UTL 10CPI
 !"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmno
pqrstuvwxyz{|}~                                                  !"#$%&'()*+,-./0
123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~

  UTL 12CPI
 !"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~
                              !"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOP
QRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~

  UTL 17CPI
 !"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~
    !"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}
```

Holding down TOF/QUIET while turning on the printer produces a continuous sample of the default print style.

```
ML320     EI      A   F/W 01.05
 !"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmno
!"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnop
"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopq
#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqr
$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrs
%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrst
&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstu
'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuv
()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvw
)*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwx
*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxy
+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz
,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{
-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|
./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}
/0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~
0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~
123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~ !
23456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~ !"
3456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~ !"#
456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~ !"#$
56789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~ !"#$%
6789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~ !"#$%&
789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~ !"#$%&'
89:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~ !"#$%&'(
```

To stop either test, press the MODE button.

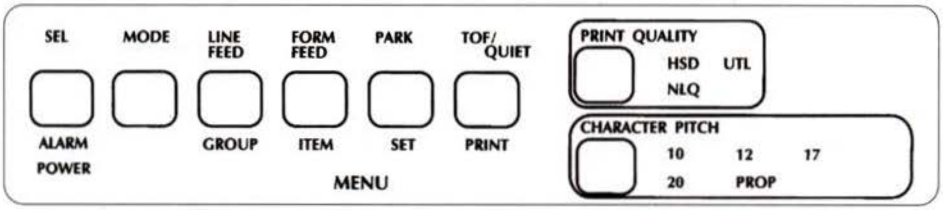
The self test printout also provides information about your printer.



Have this information at hand if you call for service.

▶ Operation

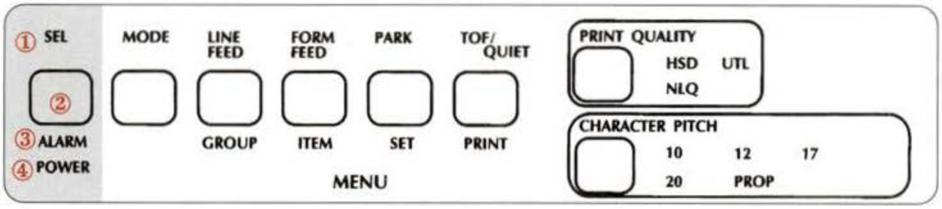
Using the Control Panel



The ML320/321's control panel does more than manipulate paper: it gives you fingertip command over most of the printing features that affect the look of your documents. You can change basic features of each document straight from the panel. Using the Menu Select mode—entered directly from the panel—you can alter the default settings of other features. (The defaults are those characteristics set automatically when you turn on or reset the printer.) You can also configure the printer for your system without setting hard-to-reach switches.

Note All buttons on the control panel are active regardless of whether the printer is selected or deselected.

Basic Controls



1. **SEL light**: When this light is ON, the printer is selected and ready to receive data from the computer. When the light is OFF, the printer is deselected and cannot receive data.

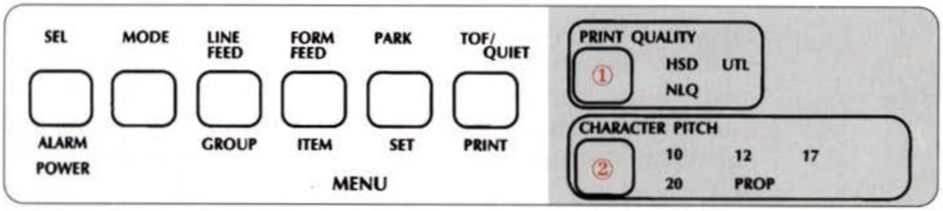
   When the light is blinking, the printer is in Print Suppress condition and will ignore all data until the Print Suppress condition is turned off. (See the Reference Guide for details.)

2. **SEL button**: Push this button to select or deselect the printer (SEL light is ON or OFF).
3. **ALARM light**: This light indicates either that paper is out or that there may be a hardware problem requiring service.
4. **POWER light**: This light indicates that the printer is turned on.

Print Characteristics

These buttons let you control basic printing features without modifying your software. Simply press a button until the selection you want lights up. You can change features when the printer is either selected or deselected.

Note This part of the panel always reflects the state of the printer; if your software changes one of these features, the corresponding light will change, too.



1. **PRINT QUALITY**

NLQ: Near Letter Quality. The highest level of print quality for your most important documents. NLQ prints in two passes of the printhead.

UTL: Utility. Higher speed printing for internal documents and high-volume data printing.

HSD: High Speed Draft. The fastest print speed. Use it for quick printouts of preliminary drafts and long documents.

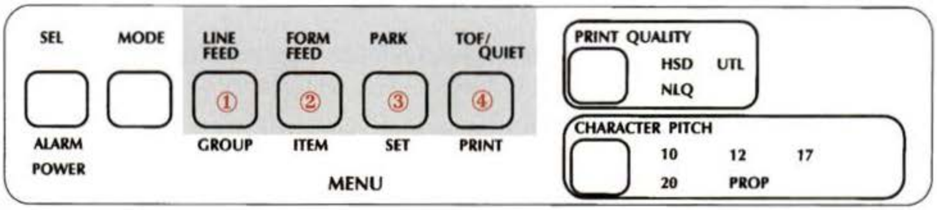
2. **CHARACTER PITCH**

10, 12, 17, 20: These determine the width of the characters, indicated in characters per inch (cpi). Normally 10 and 12 pitch are used for standard text; 17 and 20 pitch are used when you want to get more information on a page—in spreadsheets, for example. (In the IBM emulation, you cannot print 17 and 20 cpi in NLQ.)

PROP: Proportionally spaced, not available in HSD. The amount of space allowed for each character varies according to the width of the character; for example, "i" takes less space than "w" does. This improves legibility and gives a more polished "typeset" look.

The MODE button

This button controls the functions of the next four buttons on the panel by switching the printer between Print mode and Menu Select mode. When the printer is in Print mode, the functions shown above the buttons are active; this is the state of the printer when you turn it on. When the printer is in Menu Select mode, the MENU indicator lights, and the functions shown below the buttons are active—this lets you customize the default settings for a number of printer features directly from the control panel.



Print Mode

1. **LINE FEED button**: Press this button to advance the paper one line.
2. **FORM FEED button**: Press this button to advance the paper to the first print line of the next page.
3. **PARK button**: Use this button with continuous-form paper. When you press it, the paper retracts from the front of the printer so you can use single sheets without completely removing the continuous forms. (See page 17 for details.)
4. **TOF/QUIET button**: When the printer is deselected, press this button to set the position of the first print line on the page ("top of form").

   When the printer is selected, press this button to enter the Quiet mode ("QUIET" lights on the panel). This mode reduces the sound produced by the printer by printing in two passes instead of one. Return to normal operation by pressing the button again with the printer selected.

Menu Select mode

In this special mode, you can customize your printer so that the features you want are automatically active when you turn it on. The selections you make on the menu are stored in the printer's permanent memory and, in effect, become default settings, although they can be changed through software commands, through the control panel, or through resetting the menu.

Note

You can override features set on the menu using either the front panel or commands sent from your computer. However, when you turn off the printer, features set by those methods will be cancelled. Features set on the menu will stay in effect, even when the printer is turned off or unplugged.

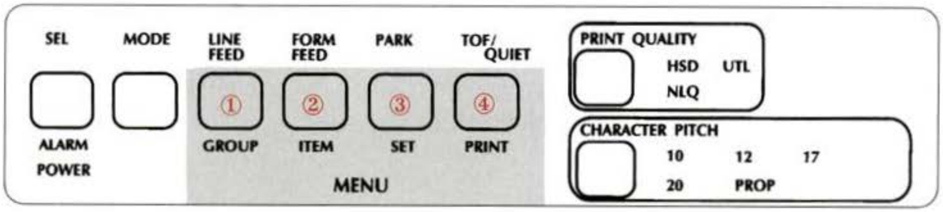
To enter Menu Select mode:

Make sure the printer has ribbon and paper.

Press MODE.

The SEL light goes out, the MENU light goes on, indicating that the menu functions, listed below the print mode buttons, are active. If you want to print out the entire menu with its current settings, press the PRINT button. When you are ready to start changing settings, press GROUP, and the first line of the menu prints. Here's how it's arranged:

`Font`	`Print Mode`	`Utility`
GROUP of related items	ITEM within the group	Current SETting for the item



When the MENU light is on, the bottom button functions are active:

1,2,3: Press these buttons to move to the next GROUP, ITEM, and SETting, respectively.

4: Press this button at any time to print a complete listing of the menu with its current settings.

Note We recommend that you print out the menu whenever you change it to keep for reference.

When you've made the changes you want, press MODE to record the changes and return to Print mode. (MENU light goes out.)

Examples (Epson/IBM model)

1. When you press SET, this line:

`Font`	`Print Mode`	`Utility`

changes to this:

`Font`	`Print Mode`	`NLQ Courier`
Same GROUP	Same ITEM	New SETting

The printer will now print using NLQ Courier.

2. When you press ITEM, this line:

`Font`	`Print Mode`	`Utility`

changes to this:

`Font`	`Pitch`	`10`
Same GROUP	Next ITEM	Current SETting for new item

To change pitch, press SET until the one you want prints.

3. When you press GROUP, this line:

Font	Print Mode	Utility

changes to this:

General Control	Emulation Mode	IBM PPR
Next GROUP	Current ITEM in new group	Current SETting

Use the GROUP button to move quickly through the menu.

Beginning on the next page is a complete listing of the menu items and selections for both the Epson/IBM and Microline Standard model ML320/321, followed by explanatory notes. You can find more details by looking up the respective topics in your Reference Guide.

Important To restore the menu to its original factory settings, turn the printer off. Then hold down the SEL and MODE buttons while you turn it on again.

Menu Selections: Epson/IBM Models

Note

Factory settings are in red.

Group	Item	Settings
Font	Print Mode	Utility, NLQ Courier, NLQ Sans Serif, HSD
	Pitch	10 CPI, 12 CPI, 17.1 CPI, 20 CPI, Proportional
	Style	Normal, Italics
	Size	Single, Double
General Control	Emulation Mode	IBM PPR, Epson FXe
	Bit Graphics	Bi-directional, Uni-directional
	Paper Out Override	No, Yes
	Print Registration	0, -1, -2, -3, -4, -5, +5, +4, +3, +2, +1
	Operator Panel Functions	Full Operation, Limited Operation
Vertical Control	Line Spacing	6 LPI, 8 LPI
	Form Tear-Off	Off, On
	Skip Over Perforation	No, Yes
	Auto LF	No, Yes
	Auto CR	No, Yes
	Auto Feed XT	Invalid, Valid
	Page Length	11″, 11⅔″, 12″, 14″, 3″, 3.5″, 4″, 5.5″, 6″, 7″, 8″, 8.5″
Symbol Sets	Character Set	Set I, Set II
	Language Set	American, French, German, British, Danish I, Swedish, Italian, Spanish I, Japanese, Norwegian, Danish II, Spanish II, Latin American, French Canadian,
	Zero Character	Slashed, Unslashed
Serial Interface	Parity	None, Odd, Even
	Serial Data 7 or 8 Bits	8, 7
	Protocol	Ready/Busy, X-ON/X-OFF
	Diagnostic Test	No, Yes

Group	Item	Settings
	Busy Line	SSD-, SSD+, DTR, RTS
	Baud Rate	19200 BPS, 9600 BPS, 4800 BPS, 2400 BPS, 1200 BPS, 600 BPS, 300 BPS
	DSR Signal	Valid, Invalid
	DTR Signal	Ready on Power Up, Ready on Select
	Busy Time	200 Milliseconds, 1 Second

Menu Selections: Microline Standard Models

Important Factory settings are in red.

Group	Item	Settings
Font	Print Mode	Utility, NLQ Courier, NLQ Sans Serif, HSD
	Pitch	10 CPI, 12 CPI, 17.1 CPI, 20 CPI
	Proportional Spacing	No, Yes
	Style	Normal, Italics
	Size	Single, Double
General Control	Bit Graphics	Bi-directional, Uni-directional
	7 or 8 Bit Graphics	7,8
	Paper Out Override	No, Yes
	Print Registration	0, -1, -2, -3, -4, -5, +5, +4, +3, +2, +1
	7 or 8 Bit Data Word	8,7
	Operator Panel Functions	Full Operation, Limited Operation
	Print Suppress Effective	Yes, No
	Printable DEL code	Yes, No
Vertical Control	Line Spacing	6 LPI, 8 LPI
	Form Tear-Off	Off, On
	Skip Over Perforation	No, Yes
	Auto LF	No, Yes
	Page Length	11″, 11⅔″, 12″, 14″, 3″, 3.5″, 4″, 5.5″, 6″, 7″, 8″, 8.5″
Symbol Sets	Character Set	Standard, DLL, Line Graphics (IBM), Block Graphics
	Language Set	American Slashed Zero, American Unslashed Zero, British, German, French, Swedish, Danish, Norwegian, Dutch, Italian, French Canadian, Spanish

Group	Item	Settings
Serial Interface	Parity	None, Odd, Even
	Serial Data 7 or 8 Bits	8, 7
	Protocol	Ready/Busy, X-ON/X-OFF
	Diagnostic Test	No, Yes
	Busy Line	SSD-, SSD+, DTR, RTS
	Baud Rate	19200 BPS, 9600 BPS, 4800 BPS, 2400 BPS, 1200 BPS, 600 BPS, 300 BPS
	DSR Signal	Valid, Invalid
	DTR Signal	Ready on Power Up, Ready on Select
	Busy Time	200 Milliseconds, 1 Second

Explanation of Menu Items

Print Mode: Choose the NLQ (Near Letter Quality) Courier or Sans Serif font, Utility for quicker printing, or HSD (High Speed Draft) for fastest printing speed.

Pitch: Choose character width measured in characters per inch (cpi), or proportionally spaced characters (Epson/IBM only).

Proportional Spacing (Microline Standard only): Choose Yes for proportionally spaced printing. In the Standard model, you can combine proportional spacing with any pitch.

Style: Choose Normal (upright) or Italics (slanted).

Size: Choose Single or Double width and height.

Emulation Mode (Epson/IBM only): Select the printer command set you want your printer to use. Choose IBM PPR for the IBM Proprinter or the Epson FXe series. See chapter 2 of your Reference Guide for hints on how to make your selection.

Bit Graphics: Choose Uni-directional (left to right only) for better graphics print registration at slower speed. Choose Bi-directional for higher print speed.

7 or 8 Bit Graphics (Microline Standard only): Choose the type of graphics your system uses: 7 or 8 dots in each column printed.

Paper Out Override: The paper out detector senses when less than one inch of paper remains in the printer and stops printing at that point. Choosing Yes overrides the detector so you can print closer to the bottom of the page if you're using single sheets. Be careful if you use this feature: it lets the printer continue printing when there's no more paper, which causes loss of data and may damage the printhead.

Print Registration: Use this item with bidirectional bit image graphics to improve registration. Although 0 is generally the best selection, choosing another value may compensate for registration problems with some graphics software packages. (See chapter 4 of the Reference Guide.)

7 or 8 Bit Data Word (Microline Standard only): Most computer systems use eight bits to make up each unit of data. If your system uses seven bits, choose the 7 setting.

Operator Panel Functions: Full Operation is the normal setting. Choose Limited Operation to deactivate the PRINT QUALITY, CHARACTER PITCH, and MODE buttons on the control panel. Then you can control these features only through your software. This can be useful when several people are using the printer and you don't want its settings changed.

Important

This feature prevents use of the menu. If you want to reactivate the menu, turn off the printer, then hold down the MODE button and turn the printer on again. Follow the normal menu procedures to reset this item to Full Operation.

Print Suppress Effective (Microline Standard only): The DC3 code places the printer in print suppress mode, in which the printer ignores all data. The DC1 code restores the printer to normal operation. Some systems use these codes for other functions, and this may cause you to lose data. If this happens, choose No to deactivate this feature.

Printable DEL Code (Microline Standard only): Choose Yes to make the printer print the DEL code (decimal 127) as a solid box.

Line Spacing: Choose 6 lines per inch ($^1/_6$″ line spacing) or 8 LPI ($^1/_8$″ line spacing).

Forms Tear Off: Use this item to turn the form tear-off feature On or Off. When the feature is active, you can easily remove continuous-form paper from the printer without wasting paper. (See page 15 for details.)

Skip Over Perforation: Choose Yes if you want the printer to advance automatically to the next page when it comes within one inch of the bottom of the page. If your software has its own page formatting controls, set this item to No to avoid interference.

Auto LF: Choose Yes to have the printer automatically add a Line Feed command to each Carriage Return command it receives. The choice depends on whether your computer adds a Line Feed. If your printout is consistently double spaced, select No; if it overprints, choose Yes.

Auto CR (Epson/IBM only): Choose Yes to have the printer automatically add a Carriage Return to each Line Feed command it receives. This feature is used only in the IBM emulation.

Auto Feed XT (Epson/IBM only): In the Epson emulation, a signal on pin 14 of the parallel interface can control automatic line feed. Some interface cables are wired in such a way that automatic line feed is always in effect; the Auto Feed XT item eliminates this potential problem. The factory setting, Invalid, causes the printer to ignore this signal; if your system uses pin 14 to control automatic line feed, select the Valid setting.

Page Length: Choose the length of the paper you're using. This enables the printer to keep track of the initial printing position on each page ("top of form").

Character Set (Epson/IBM): Choose IBM Character Set I or Set II. (See Appendix C of the Reference Guide.)

Character Set (Microline Standard): Standard is the normal Microline character set; Line Graphics (IBM) is the IBM Character Set I; Block Graphics contains a series of graphic characters that let you create designs by combining various block patterns. See Appendix C of the Reference Guide for details on these character sets. DLL lets you print custom characters designed on your computer and downloaded to the printer; see chapter 4 of the Reference Guide for details.

Language Set: These sets replace certain symbols with special characters used in the respective foreign languages. (See "International Character Sets" in the Reference Guide.) The Microline Standard menu also includes American Slashed Zero and American Unslashed Zero; choose Slashed Zero when it's important to distinguish between a zero and a capital letter O.

Zero Character (Epson/IBM only): Choose Slashed when it's important to distinguish between a zero and a capital letter O.

The following items apply only to the optional serial interface, although they will be displayed regardless of whether the interface is installed. See the Appendix for details.

Parity: Selects parity.

Serial Data 7 or 8 Bits: Selects data format.

Protocol: Selects interface protocol.

Diagnostic Test: Activates the printer's interface diagnostic test.

Busy Line: Selects line used for busy signal.

Baud Rate: Selects data transmission speed.

DSR Signal: Sets the Data Set Ready (DSR) signal.

DTR Signal: Selects Data Terminal Ready (DTR) signal status.

Busy Time: Sets busy signal timing.

Cleaning

Every six months (or after about 300 hours of operation), take a clean, dry cloth and dust the area around the carriage shaft and platen. Be sure to remove any loose particles of paper. Don't use solvents or strong detergents on the cabinet. Be sure to turn the printer OFF before cleaning.

Problem Solving

Here are some of the most common printer problems and how to solve them. If you're still having difficulties, see the Customer Service Guide, included with your printer. It will tell you how to get help from your dealer or from OKIDATA, and how to get your printer serviced.

What if...

...**nothing happens at all when I turn on the printer?**

The printer may not be plugged in. Check the power cord connection to the printer and the outlet. If you're using a power strip, make sure it's turned on.

...**the ALARM light goes on?**

You may be out of paper, or the paper has jammed. The SEL light will also go out, so when you've reloaded paper, press the SEL button. If the ALARM light doesn't go out when you reload paper, then there is probably a malfunction in the printer that requires service.

...**the printer doesn't print when the computer sends it data?**

The printer may be deselected—if the SEL light is out, press the SEL button.

...**the paper keeps jamming?**

Be sure to set the top of form so that the paper is held in place by the bail. If the top of the page is below the bail, it will catch on the bail as it advances. Don't use the Form Feed button to load paper into the printer.

If the paper does jam, turn the printer off and back it out carefully using the platen knob. Be sure to remove any shreds of paper from the printer.

...the printer suddenly changes to unidirectional printing, then stops completely and the MENU light flashes?

This is a feature designed to protect the printhead. Heat can build up in the printhead when it's been printing for a long time, so when the printhead reaches a certain temperature, the printer switches to unidirectional printing. If heat continues to increase, the printer will stop until the printhead cools down; then it resumes printing.

...there are dots missing in my printouts?

The head gap may not be set correctly. Try moving the head gap lever to a lower setting. (See page 11.) If that doesn't help, the printhead may be damaged; call for service.

...my word processor files don't print the way I have the menu and front panel set?

Before sending a file to the printer, many word processors send an "initialization string." This string contains codes that reset the printer to a default set of features; otherwise the printer might accidentally print using features set for a previous job. The codes will override panel or menu settings. Check your word processor's manual to see if you can customize the initialization string; if so, remove any codes that interfere with your printer's settings.

...the menu and print feature buttons don't work

The Operator Panel Functions item on the printer menu can be used to disable these features. If the printer is part of a customized system or if it is used by a number of people, the system manager may have used this option to make sure the printer is always set properly.

...I want to check the data my computer is sending to the printer?

Use the hexadecimal dump mode. To enter this mode, hold the SEL button down while you turn on the printer. All data sent to the printer, including text and printer commands, will print in both hexadecimal and ASCII format. (In the ASCII format, all non-printable codes will be represented by a period.) For example, this line of BASIC code:

```
LPRINT CHR$(27);"0";CHR$(30);"This is an example of a
hexadecimal dump."
```

would print like this:

```
1B  30  1E  54  68  69  73  20  69  73  20  61  6E  20  65  78  .0.This is an ex
61  6D  70  6C  65  20  6F  66  20  61  20  68  65  78  61  64  ample of a hexad
65  63  69  6D  61  6C  20  64  75  6D  70  2E  0D  0A          ecimal dump...
```

To return to normal printing, turn the printer off, then on again.

...**static electricity causes the paper to stick?**

In cold, dry weather, static charges can build up on continuous-form paper. This can make the paper cling to the paper separator. If you have this problem during high-volume printing jobs, try moving the single sheet paper guides on the separator together so that the paper rests on the guides rather than on the separator itself.

▶ Appendix: The Optional Serial Interface

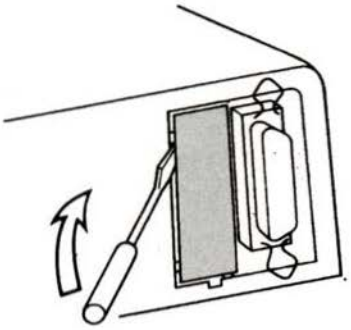
This appendix explains how to install the optional 19,200 BPS serial interface board and describes the menu settings that configure it. For details on cabling and diagnostic testing, see Appendix D of your Reference Guide.

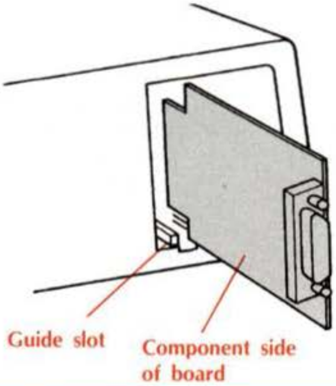
Installation

Important

Handle the interface board with care to avoid damaging its components. The components can also be damaged by static discharges. We recommend that you leave the board in its protective packaging until you've read these instructions and are ready to install it. Make sure the printer is unplugged before you install the board.

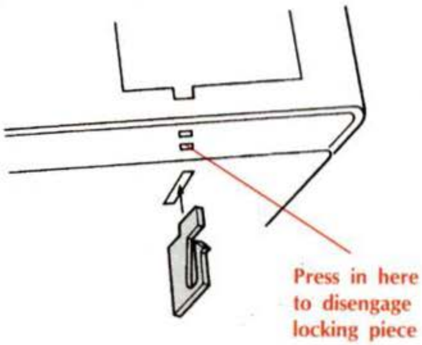
1. Remove the plastic covering over the serial board opening in the rear of the printer. Use a small knife or flat-head screwdriver to pry it free.





2. Holding the board by the cable connector with the components facing **away** from the parallel interface, gently slide it into the opening against the guides at the top and bottom. Press it firmly into place.

3. Lock the board into place by inserting the plastic locking piece into the hole in the printer base below the card opening. The piece will click into place.



4. Connect the interface cable (sold separately) to the printer interface connector and to the serial port of your computer. Be sure to tighten the screws on both ends of the cable to keep it in place.

Important Make sure that you do not have a parallel cable connected to the printer when you're using the serial interface. You can switch to the parallel interface without removing the serial board, but only one cable can be attached at a time.

Menu Selections for Serial Interfacing

If you are using the serial interface, set the following menu items according to your computer's interface requirements. (See pages 37-40 for details on how to use the Menu Select mode.)

Parity: Select the type of parity your system uses: Odd, Even, or None.

Serial Data 7 or 8 Bits: Select 7 if your system uses a 7-bit data format, or 8 if it uses an 8-bit format.

Protocol: Select the protocol your system uses: Ready Busy or X-On/X-Off.

Diagnostic Test: Select Yes if you want to perform a diagnostic test of the serial interface. (See Appendix D of your Reference Guide for details.) Select No for normal information.

Busy Line: If you've specified Ready/Busy protocol above, you can choose which line your system monitors for a busy signal:

SSD -9V—select SSD-
SSD +9V—select SSD+
DTR -9V—select DTR
RTS -9V—select RTS

Baud Rate: Select the transmission rate the system is set for; the choices range from 300 BPS to 19,200 BPS.

DSR Signal: Select the way your system handles the Data Signal Ready Signal—Valid or Invalid.

DTR Signal: Select Ready on Select if the DTR signal is required when the printer is selected; choose Ready on Power Up if the DTR signal is required when the printer is turned on.

Busy Time: Select the length of the busy signal: 200 milliseconds or 1 second. Busy time only applies to the Ready/Busy protocol.

Note

Once you've set the menu, print a copy for future reference.

Federal Communications Commission Radio Frequency Interference Statement

WARNING: This equipment complies with the limits for a Class B computing device in accordance with the specifications in Subpart J of Part 15 of FCC rules. These specifications are designed to minimize radio frequency interference in a residential installation; however, there is no guarantee that radio or television interference will not occur in any particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on when the radio or television is on, the user is encouraged to try to correct the interference by one or more of the following measures:

- ▶ Reorient the radio or television receiving antenna.
- ▶ Relocate the printer with respect to the receiver.
- ▶ Move the printer away from the receiver.
- ▶ Plug the printer into a different outlet so that the printer and receiver are on different circuits.

If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions. The user may find the following booklet prepared by the Federal Communication Commission helpful:

"How to Identify and Resolve Radio/TV Interference Problems"

This booklet is available from the U.S. Government Printing Office, Washington, DC 20402 by ordering stock number 004-000-00345-4.

Canadian Department of Communications Radio Interference Statement

This OKIDATA digital apparatus does not exceed Class B limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

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